



STAN-EVAL NOTES
CIVIL AIR PATROL VIRGINIA WING
UNITED STATES AIR FORCE AUXILIARY
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Avoiding Wake Turbulence: A recent article in "Flying Lessons" reminds us of the hazards associated with wake turbulence. Any aircraft in flight generates wake turbulence which can affect a following aircraft. It is especially hazardous during takeoff and landing as there is little altitude to recover should you encounter it. Taking off or landing behind an aircraft that is significantly larger than what you are flying should be cause for concern. The wake turbulence that concerns us is from the wingtip vortices generated as the wing generates lift. These vortices are well organized and can be quite violent when encountered. When the air is smooth, the vortices will last for several minutes while turbulent air tends to break up vortices. An aircraft with gear and flaps down will generate less severe wake than when clean as the turbulence generated by the flaps and gear tend to break up the more organized wake from the wing tip vortices. In general the wake will tend to sink slowly behind the generating aircraft meaning that flying above the preceding aircraft will ensure you stay clear of its wake.

Helicopters also generate quite strong wakes that can be dangerous for small aircraft. There are two sources of turbulence from a helicopter. In forward flight, helicopters generate vortices from the rotors (similar to a fixed wing aircraft) as well as a turbulent downwash. A helicopter in hovering flight (which is typical in the airport pattern) should be given a wide berth as the downwash can be quite violent close to the ground.

On takeoff, the pilot can take one or more steps to avoid the wake of a preceding aircraft. Waiting is one technique as the vortices will eventually die out. Rotating and staying above the flight path of the preceding aircraft will also ensure any wake remains under you. You can turn after takeoff to avoid a preceding aircraft's wake but be aware of which way the wind is blowing as the wake will drift with the wind. So better to turn into the wind.

Following another aircraft to landing can also create a situation for a wake turbulence encounter. Staying above the preceding aircraft's flight path and landing past its touchdown point will avoid the wake. Or just wait a few minutes to ensure that any wake has dissipated.

Although avoiding wake turbulence during takeoff and landing is critical, wake turbulence can be encountered in any phase of flight when you cross the wake of another aircraft. These encounters can range from an insignificant bump to a violent upset causing structural failure. If you fly in the vicinity of an airport where large transport aircraft fly, stay away from their wake. If you have to cross their path (or they cross yours), fly above them or at least 1000 feet below them.

CAP pilot Josh Shields, formerly of the Roanoke Squadron (now a member of ILWG) can attest to the power of wake turbulence: "On two separate occasions in my professional flying career I have been upset by severe wake turbulence. Both times I was following a Boeing 747-400 on the same IFR arrival path into Washington Dulles. Both times, the 747 ahead of us descended through our altitude as directed by ATC from a higher altitude, resulting in my aircraft flying through the wake of the preceding 747. Most importantly, in BOTH instances (and flying an aircraft much larger than what CAP flies), my aircraft was very quickly rolled beyond 80 degrees of bank. In one case the CRJ rolled to 113 degrees of bank and 6 degrees nose down (as reported by the flight data recorder after the flight). Surprising? That's not all... in both cases, we were MORE THAN 10

MILES BEHIND the 747! Fortunately each of these events occurred at about 15,000' with plenty of room for recovery and nobody was injured. Imagine what that's like in a 172! Best wishes to all of you in VAWG!"

A good video on wake turbulence can be found ([click here](#)).

Turbulence and Downdrafts in the mountains: Mountain Mission Pilots should be concerned about turbulence and downdrafts when flying low in the mountains. A smooth air day may not be so smooth low in the mountains as even a light wind over the hills can cause a bumpy ride. 30 knots or more of wind in the mountains may be a good reason to stay on the ground. Even if the ride is not hazardous, it can make your observers and scanners launch their lunch at a most inopportune time (that time would be anytime you are in the aircraft).

When flying in moderate or greater turbulence (not just in the mountains), keep your speed below maneuvering speed (V_a). Recall that V_a is a function of gross weight so it is generally slower than what is published. Because the load limits change when flaps are extended, retract your flaps in C182 and GA8 aircraft in moderate or greater turbulence. If you are caught in a downdraft, do what glider pilots do and increase your speed (or pull up to V_x if you are that close to the ground). This minimizes your time in the downdraft which in turn minimizes your altitude loss.

Upcoming Workshops: We are tentatively planning for a Mountain Flying Clinic 14-15 April and an Instructor Pilot/Check Pilot workshop in June. Look for more details as the planning matures.

VAWG needs more Instructor Pilots: Instructor pilots are critical players in keeping VAWG aircrews safe and proficient. Although we are fortunate to have several dedicated instructor pilots, we don't have enough and the ones we do have tend to be concentrated in just a few areas. We currently have no instructor pilots in the Tidewater area for example. So what does it take to become an instructor pilot in CAP?

- Be a current CFI
- Have the IP block on your Form 5 initialed by a check pilot
- You will need to have a short phone interview by the VAWG DO
- You must then be appointed on eServices

Instructor pilots in VAWG must first and foremost be competent CFI's. But they must also be familiar with CAP procedures (WMIRS, eServices, CAPR 60-1, and so forth) and willing to teach all relevant procedures to our pilot population. CFI's who are not willing to teach the CAP part cannot be VAWG Instructor Pilots. We are reluctant to appoint a CFI who just joined CAP, no matter how proficient, until that person has gotten some CAP flying experience. You can't teach what you haven't done.

Lessons from AF447: Many of us have read with horror the events in the cockpit of AF447 resulting in all crew and passengers losing their life in the Atlantic. Although flying a highly automated Airbus 330 is quite different from our CAP aircraft, there are still a few lessons that are worth noting.

- The aircraft was destroyed by a highly skilled and trained crew. There was nothing wrong with the aircraft, and except for a momentary loss of a few of the flight instruments, the aircraft flew into a cold ocean performing exactly as it was designed to do. This is unfortunately consistent with general aviation where pilot judgment is the number one cause of accidents.
- The crew was unable to think their way through a scenario that they had not encountered in training. Although what happened was not what they had been trained for, if the crew had exercised the most basic airmanship the flight would have continued quite uneventfully. In CAP, we train for the "usual" emergencies such as in-flight fire, low fuel, and so forth. But every flight is different and we will face emergencies that we have not specifically trained for. That's when going back to basics is so critical. Aviate, navigate, communicate. And how about the three "P's" when faced with an emergency?

- Crew resources were mismanaged. Although they had been trained in crew resource management, neither the captain, nor the left seat pilot understood what the right seat pilot was really doing. We preach CRM in CAP, but let's be sure we understand what each of us is doing. Who is flying the airplane? Who is the PIC? Did you really tune the right frequency? Is the autopilot doing what you think it is doing? Did your observer really load the RNAV 24 approach or was it the ILS 24 approach? Check, crosscheck, confirm.
- And finally, let's not be too smug and fall into "It couldn't happen to me." See the FAA article below on how it can happen to anyone!

DC Special Flight Rules Area (SFRA) Course Updated (courtesy of the FAA): In connection with a November 30, 2011, change that eliminates the SFRA flight plan requirement for direct entry/exit from the Leesburg Executive Airport (JYO), the FAA has published a revised version of the SFRA special awareness training course at www.faasafety.gov. The updated and simplified course includes entry/exit scenarios, as well as revised versions of the downloadable kneeboard guides for operating in this airspace. Pilots who have already completed the course are not required to take it again, but we encourage those operating in this area to review the material from time to time as a refresher. The course, titled Washington DC Special Flight Rules Area (SFRA), is available in the online course catalog at https://www.faasafety.gov/gslac/ALC/course_catalog.aspx#catalog.
(Ed: All VAWG pilots are required to have taken the SFRA on line course)

Cessna Launches New Safety Initiative (Courtesy of the FAA): Cessna Aircraft Company launched a new safety initiative this month to educate owners about new inspection procedures designed to help safeguard against corrosion and fatigue. The initiative affects 145,000 airplanes of the 100- and 200-series built between 1946 and 1986. The program stresses visual inspections for both corrosion and cracks caused by metal fatigue. The revised inspection program will be published in the airplane service manual in December 2011 for the 200-series, and in April 2012 for the 100-series. According to a Cessna engineer, the program is primarily a "visual process aimed at supporting the continued airworthiness of aging airframes." The criteria for inspections will vary by model and aircraft age or hours of operation. Cessna's website contains more details on the program along with links to a video and interactive presentation:
www.cessna.com/NewReleases/FeaturedNews/NewReleaseNumber-1192361531220.html.

It Can Happen to Anyone!!! (Courtesy of the FAA): Runway incursions really can happen to anyone, which is why being vigilant is so important. Get some runway safety pointers from Master Pilot Bill Castlen's first-person account of his runway incursion at Hartsfield-Jackson Atlanta International, the world's busiest airport, in the November/December FAA Safety Briefing.
www.faa.gov/news/safety_briefing/2011/media/NovDec2011.pdf

The Continuing Tragedy of Continued VFR (Courtesy of the FAA): How many times have we written in FAA Safety Briefing about the risks of flying into weather conditions you are not able to handle? Many. How many safety seminars cover the same topic? Countless. This is because it is a leading cause of GA accidents. Today, we read perhaps the most eloquent statement on this subject we have ever seen. We suggest you read it, too. Check out J. Mac McClellan's Left Seat blog on The Continuing Tragedy of Continued VFR at: <http://macsblog.com/2011/11/the-continuing-tragedy-of-continued-vfr/>.

What is the Biggest Wildlife Risk at GA Airports? (Courtesy of the FAA): We hear so much about bird strikes, but according to FAA Wildlife Biologist Amy Anderson, deer are the biggest risk at GA airports. Deer strikes account for more than 50 percent of all wildlife strikes at GA airports since many small airports are near rural forested areas, a haven for deer. Read more about wildlife risks and about Amy Anderson in the Nov/Dec 2011 issue of FAA Safety Briefing.

Heads down with the autopilot: Here's an extract from a recent aircraft accident (WPR12LA048) that could easily happen to glass pilots. Or a GA8 pilot programming the GNS480. Aviate, navigate, communicate!

"This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed. On November 29, 2011, about 1900 mountain standard time, a Piper PA-32RT-300T, N36824, impacted the terrain about one mile east of Friedman Memorial Airport, Hailey, Idaho. The pilot received minor injuries, his passenger received serious injuries, and the airplane, which was owned and operated by the pilot, sustained substantial damage. The 14 Code of Federal Regulations Part 91 personal transportation flight, which had just departed Hailey for Nampa, Idaho, was being operated in night visual meteorological conditions. No flight plan had been filed. According to the pilot, during the initial climb over the valley that extends south from Hailey, he was focused on trying to get the autopilot system set up in a manner that would allow it to be used to direct the airplane to Nampa. During the time that the pilot was focused on the autopilot, the airplane began turning to the left without him being aware of it. As the airplane continued to turn, it approached the steeply rising terrain to the east of the airport. The passenger, who was looking outside, noticed the oncoming terrain and made the pilot aware of the situation. When the pilot saw the terrain, he quickly reached the conclusion that he was not going to be able to avoid it, so he maneuvered the airplane into a controlled crash."

Counter Weights and Flutter: Checking the condition of counterweights on control services is an essential part of any preflight. Loose or missing counter weights are a no fly item. Counter weights prevent flutter which can tear an aircraft apart in just a few seconds. Our fleet of Cessna a/c has counter weights on all control surfaces. Know what they look like, how many there are, and ensure that the rivets have not worked loose. It's especially important to check these if control surfaces have been removed for MX issues or if the a/c has suffered an animal strike. Despite a thorough preflight, it's possible to encounter flutter if there is a bird strike in air or other metal bending event. Exceeding the never exceed speed also leads to flutter. The onset of flutter is usually a buzzing sound followed by uncontrollable bending and flexing of aerodynamic surfaces, followed by structural failure. If there is any indication of flutter you must slow down immediately. Lowering airspeed is the only way to stop it.

Resetting Circuit Breakers: Until recently, the general consensus was that if a circuit breaker popped during flight it could be reset once. Recent changes to FAA guidance recommend that pilots not reset any circuit breaker in flight unless it is essential for flight. (See Special Airworthiness Information Bulletin CE-10-11, available on the FAA website). This change is the result of an accident that caused the loss of an aircraft due to resetting a breaker. Some POHs may call for the resetting of breakers when completing abnormal or emergency checklists. If this is the case, pilots should carefully consider the circumstances that may have caused the C/B to pop, and weigh the benefits of resetting the breaker against any possible consequences.

1. Know what C/Bs are essential for flight. In light GA aircraft, there are very few systems that we actually require to have operational during an emergency, especially during VFR operations.
2. "Essential" C/Bs should be reset in flight only once, and only:
 - a. after at least one minute;
 - b. if there is no remaining smoke or "burning smell"; and
 - c. the affected system and equipment is needed/essential for the operational environment.
3. Do not reset any non-essential C/Bs in flight.
4. Revise the preflight checklist to delete "Circuit breakers-In" if applicable and insert: "Check circuit breakers and if a circuit breaker is not set, do not reset the circuit breaker if there is a related maintenance malfunction."

Pilots should NEVER reset a circuit breaker that trips more than once. Leave it alone and contact the wing maintenance officer upon landing to arrange for troubleshooting and corrective action.

Articles for the VAWG Stan Eval Newsletter: We are always looking for brief articles of interest to VAWG pilots to include in this newsletter. CAP has many very experienced pilots and aircrew who have useful techniques, experiences, and tips to share. Please send your contribution to steve.hertz@ngc.com. If your article is accepted, you will get a pro rata share of the VAWG Stan Eval Newsletter subscription fees.